

CLAIMS

1. Apparatus for detecting the presence of a workpiece on a machine, comprising:

5           (a) a mount for holding the workpiece on the machine, said mount having a contact surface designed for contact with the workpiece, an external surface designed to be free of contact with the workpiece and an internal passageway extending between said surfaces;

10          (b) a vacuum pumping and sensing apparatus connected to the end of said passageway at the external surface of the mount, said apparatus having a sensor that senses the pressure in said passageway; and

15          (c) a control device connected to said vacuum pumping and sensing apparatus for stopping the operation of said machine or for taking other appropriate action when said sensor senses a pressure above a predetermined maximum pressure.

2. Apparatus for detecting the presence of a workpiece on a machine according to claim 1 wherein the machine is a stamping press, the workpiece has a tubular shape, the mount is a mandrel having a substantially cylindrical surface designed for sliding contact with the workpiece and the passageway in the mount has a first portion that extends radially inwardly from said cylindrical surface and a second portion that extends axially of the mandrel from the radially inward end of said first portion to an external end of the mandrel that is designed to be free of contact with the workpiece.

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3. Apparatus for detecting the presence of a workpiece on a machine according to claim 1 wherein the machine is a mold press, the workpiece is an insert to be applied to the molded product during the molding process, the mount is a part of the mold press that also holds the insert in its proper place during the molding process and the passageway in the mount extends from a surface of the mount in contact with the insert to an external surface that is designed to be free of contact with the insert.

4. A method of detecting the presence of a workpiece on a machine mount, comprising the steps of:

- (a) placing a workpiece on the mount,
- (b) drawing a vacuum through a passageway in the mount,
- (c) measuring the pressure in the passageway,
- (d) allowing the machine to operate on the workpiece when said pressure is below a predetermined maximum pressure, and
- (e) preventing the machine from operating when said pressure is above a predetermined maximum pressure.

5. The method of detecting the presence of a workpiece on a machine mount according to claim 4, comprising also the step forcing pressurized air through said passage after said machine has completed its operation on the workpiece, to clean debris from the passageway surfaces and other surfaces of the mount.